UPDATE OF HEPATIC SURGERY ON THE DOG

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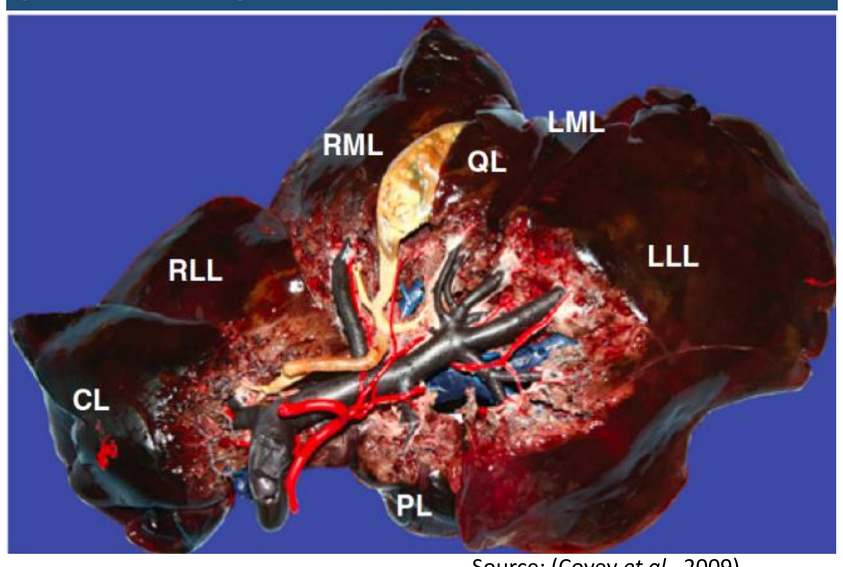
OBJECTIVES

- Make a bibliographic review where the surgical techniques previously used for lobectomies and liver biopsy and the contribution of new techniques are studied.
- Describe the pre and post operative care of the hepatectomized patient.
- Investigate new technologies for the control of intraoperative haemorrhages.
- Study the classification of liver tumors and expose existing supportive therapies for patients with hepatic neoplasia.

1. INTRODUCTION

Guillotine lobectomies and hepatic lobule fracture, traditionally used, has a high mortality rate and complications from trans and post surgical hemorrhage, especially in large dogs. In 2009, Covey describe the anatomy of the hepatic lobule detailing the location of the hepatic vein, hepatic artery and biliary system in relation to the portal vein, allowing the study of the lobe as an anatomical region and thus generating a new surgical approach proposal.

2. ANATOMY OF DOG LIVER (REGIONS) [3,7]



Source: (Covey *et al.*, 2009)

3. PATHOLOGIES [6]

3.1 TUMORS

Tumor type	massive	nodular	diffuse
Hepatocellular carcinoma	53%-84%	16%-25%	0%-9%
Biliar duct carcinoma	37%-46%	0%-46%	17%-54%
Neuroendocrine tumor	0%	33%	67%
Sarcoma (mesenchimal)	36%	64%	0%

Frequency of malignant primary hepatic tumors in dogs. Source (Culp et al, 2012).

4. DIAGNOSIS [12,6,4,7,13]

There are different type of diagnostic techniques that will be used depending on the type of patient and pathology.

- Rx
- TOMOGRAPHY (TAC)
- MAGNETIC RESONANCE (MRI)
- ECOGRAPHY , MICROBUBBLES (CEU)
- CITOLOGY: FINE NEEDLE PUNCTURE
- BIOPSY: WEDGE / PUNCH / TRU-CUT GUILLOTINE.

5. PRE AND POST SURGICAL TESTS

PRE [3]

- BLOOD PRESSURE
- TOTAL PROTEINS
- PT & PTT
- HEMOGRAM
- BLOOD CHEMISTRY
- CROSS MATCH
- BLOOD TYPOLOGY
- CONCOMITANT / METASTATIC DISEASES
- HEMOPARASITES
- PALPATION

POST [12,7,9,14]

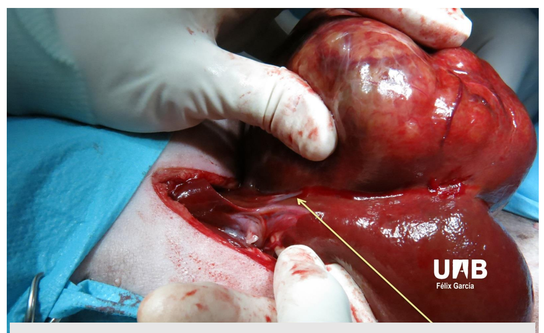
- BLOOD PRESSURE
- TOTAL PROTEINS
- PT & PTT
- HEMOGRAM
- BLOOD CHEMISTRY
- TEMPERATURE
- LACTATO
- URINE PRODUCTION
- C PROTEIN
- ELECTROLITES
- GLUCOSE

6. PATIENT SELECTION CRITERIA [12,5,14]

TECNIQUE / SIZE OF DOG	LARGE DOGS	MEDIUM DOG	SMALL DOG
HILAR LIVER RESECTION	*	*	*
GUILLOTINE TOTAL LOBECTOMY			*
GUILLOTINE PARTIAL LOBECTOMY			*
WEDGE PARTIAL LOBECTOMY	*	*	*
FRACTURE PARTIAL LOBECTOMY		*	*

7. HILAR LIVER RESECTION [5]

- LIGATURE OF THE MAIN VESSELS OF EACH LOBULE
- ↓ HEMORRHAGE TRANS AND POST SURGICAL
- ↓ BILIARY SPILL PERITONITIS
- RESECTION OF A HEPATIC REGION WITHOUT COMPROMISING THE VASCULATURE OF ANOTHER
- ↑ SURVIVAL IN ALL SIZES OF DOGS

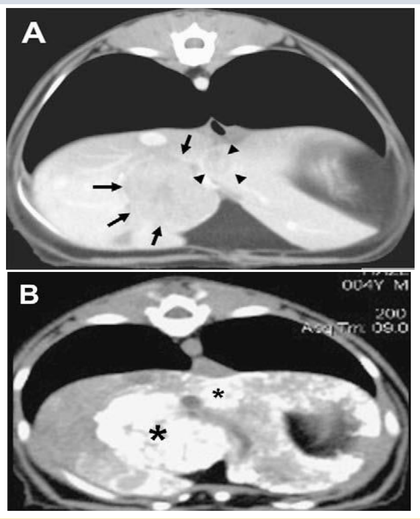


We could raise a partial lobectomy since part of the lobe is fine, but the portal branch is clearly directed to the tumor and it would be difficult to dissect it

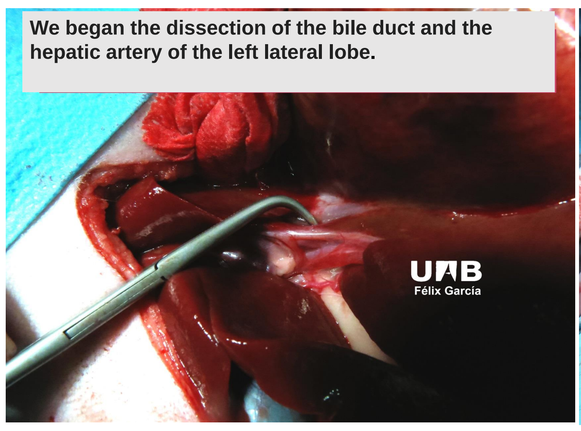
8. SUPPORTIVE THERAPY [1,13,15]

8.1 EMBOLIZATION
8.2 CHEMOEMBOLIZATION
- Lipiodol ®+ chemoterapy
- Polyvinyl alcohol particles.

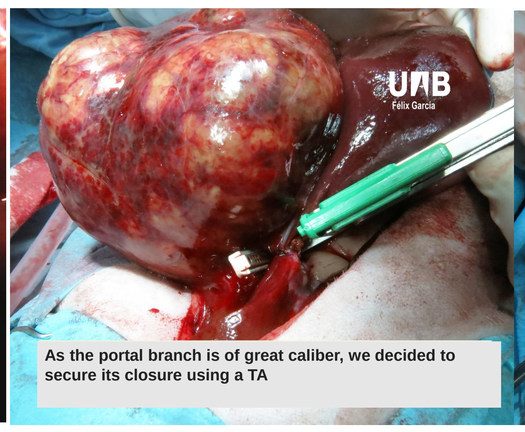
8.3 CONVENTIONAL CHEMOTHERAPY (MTD) + NSAID
8.4 METRONOMIC CHEMOTHERAPY + NSAID



9. NEW TECHNOLOGIES [10,12]



We began the dissection of the bile duct and the hepatic artery of the left lateral lobe.



As the portal branch is of great caliber, we decided to secure its closure using a TA

As the last step is the closure of the hepatic vein using an at TA, final aspect of lobectomy by hilar dissection

CONCLUSIONS

The performance of pre and post surgical examinations allows us to adequately evaluate the patient.
The lobectomy by hilar dissection is definitely the best technique to resolve tumors in the dog as it reduces survival by reducing trans and post surgical complications.
The use of technology in surgical tools increases success.
The use of traditional chemotherapy, metronomics and interventional radiology techniques offer new options for patients with reserved prognosis.
Adequate post-surgical patient care offers a higher survival rate.

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